

The problem

- Caribbean reefs are in decline and have lost significant amounts of coral cover.
- Coral populations do not seem to recover fast enough, WHY??
 - Is reproductive output low?
 - Is settlement of larvae low?
 - Is survivorship of recruits low?

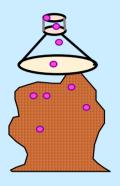
What we need

- Understand factors that affect larval and recruitment survivorship to be able to understand reef recovery and resilience.
- To develop management tools to help with coral restoration and recovery



CORAL CULTURING FROM SPAWN

(1) Collect spawned gamete bundles

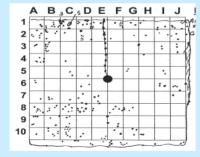


(2) Fertilize in bucket (on boat or in lab)



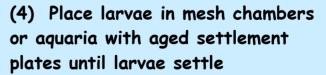
(3) Culture coral larvae in the laboratory until they are mature enough to settle (4 to 8 days depending on species

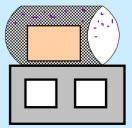






(5) Settled spat mapped on plates under a micsroscope and then plates deployed on reef; plates are retrieved and re-examined to follow survivorship





Methods

- Have been used in the Florida Keys to study survivorship of Montastraea spp and Acropora palmata
- Similar approach will be used in the pilot project in La Parguera to examine:
 - Natural settlement rates
 - Post-settlement survivorship



Factors that Affect Settlement

- Substrate characteristics
 - CCA cover
 - CCA species composition
 - macroalgal cover
 - sediment cover & type

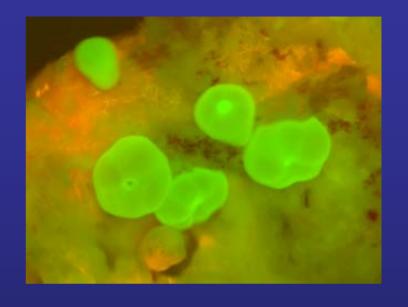
Above Affected by...

- grazer community composition
- → weather, tides, storms
- water quality conditions

PROPOSED 'Settlement' RESEARCH:

- 1. Aged settlement plates examined 2 weeks and 8 weeks after coral spawning for evidence of natural settlement
- 2. Deploy plates along environmental gradients of interest or concern (sub-set of the reefs presently being monitored for coral recruitment under CRES)
- 3. Re-deploy plates with spat and follow for survivorship
- 4. Survey for composition of grazing community since grazers are thought to be important in conditioning substrate to be more favorable for coral settlement





Coral larvae usually settle next to but not on CCA; often cryptic and difficult to locate

Fluorescent
microscope helps
quickly find the newly
settled corals